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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.
09/176,374	10/21/98	TAKEUCHI E	04645.0444

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ART UNIT	**PAPER NUMBER**
1745	10

DATE MAILED: 10/30/00

Please find below and/or attached an Office communication concerning this application or proceeding.

Commissioner of Patents and Trademarks

Office Action Summary	Application No. 09/176,374	Applicant(s) Takeuchi
	Examiner Tracy Dove	Group Art Unit 1745

☒ Responsive to communication(s) filed on *18 Aug 2000* .

☒ This action is **FINAL**.

☐ Since this application is in condition for allowance except for formal matters, **prosecution as to the merits is closed** in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11; 453 O.G. 213.

A shortened statutory period for response to this action is set to expire *3* month(s), or thirty days, whichever is longer, from the mailing date of this communication. Failure to respond within the period for response will cause the application to become abandoned. (35 U.S.C. § 133). Extensions of time may be obtained under the provisions of 37 CFR 1.136(a).

Disposition of Claims

☒ Claim(s) *1-19* is/are pending in the application.

Of the above, claim(s) _____ is/are withdrawn from consideration.

☐ Claim(s) _____ is/are allowed.

☒ Claim(s) *1-19* is/are rejected.

☐ Claim(s) _____ is/are objected to.

☐ Claims _____ are subject to restriction or election requirement.

Application Papers

☐ See the attached Notice of Draftsperson's Patent Drawing Review, PTO-948.

☐ The drawing(s) filed on _____ is/are objected to by the Examiner.

☐ The proposed drawing correction, filed on _____ is ☐approved ☐disapproved.

☐ The specification is objected to by the Examiner.

☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. § 119

☐ Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d).

☐ All ☐ Some* ☐ None of the CERTIFIED copies of the priority documents have been

☐ received.

☐ received in Application No. (Series Code/Serial Number) _____ .

☐ received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

*Certified copies not received: _____ .

☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).

Attachment(s)

☐ Notice of References Cited, PTO-892

☒ Information Disclosure Statement(s), PTO-1449, Paper No(s). *9*

☐ Interview Summary, PTO-413

☐ Notice of Draftsperson's Patent Drawing Review, PTO-948

☐ Notice of Informal Patent Application, PTO-152

— SEE OFFICE ACTION ON THE FOLLOWING PAGES —

DETAILED ACTION

This Office Action is in response to the communication filed on 8/18/00. Applicant's arguments have been considered, but are not entirely convincing. The claims, as amended, remain rejected in view of the prior art of record. This Action is made **FINAL, as necessitated by amendment**.

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 1-10 are rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

Claim 1 states "one of the electrodes contacts both of said oppositely-facing surfaces of said mandrel" which is not supported by the specification. The specification and drawings teach that the separator, not the electrodes, contacts the mandrel. The specification does not provide support for an electrode contacting both surfaces of the mandrel.

OVERCOME

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 5, 6, 8, 9, 16, 17 and 18 rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 5, 8 and 16 state "an axis about which said electrodes are folded and is formed to have a curved edge surface extending crosswise of said axis" which is unclear. Specifically, "extending crosswise of said axis" does not clearly define where the edge surface extends. The specification provides no definition for where crosswise of an axis would be located.

no curved surface cannot lie in a plane

To the extent that the claims are understood in view of the 35 U.S.C. 112 rejections above, note the following prior art rejections.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 1-19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Machida et al. 4,709,472 in view of Takeuchi et al. 5,549,717.

Machida et al. teaches a method of manufacturing a spiral electrode assembly with a portion consisting of a separator only wound in a first step of the winding operation. This eliminates winding of a portion of one of the electrode members, which frequently results in a short-circuit. The first electrode is wound prior to winding of the second electrode, so that, even when the separator may be damaged by the sharp corners of the electrode members, the absence of the other electrode member in the area opposite the sharp corners will prevent a short-circuit. One of the electrode members or the negative electrode member is covered on at least its both surfaces with the separator. Note col. 5, line 62-col. 6, line 17. Figure 6 shows that one electrode is longer and that the longer electrode is wound around the mandrel separately before winding of the second electrode. The electrode assembly conforms to the curved wall of the cell, as shown in Figure 8. Lithium can be used to form an electrode member. See col. 3, lines 8-10.

Machida et al does not explicitly teach a mandrel of rectangular cross-section having a pair of parallel and planar oppositely-facing surfaces.

However, Takeuchi teaches shaping an anode-cathode subassembly so that the assembly has a rectangular cross-section. One way of achieving this shape is by using a mandrel of substantially rectangular configuration, i.e. cross-section, about which the combination is wound. The step of shaping can be performed simultaneously with the step of winding the combination. See col. 5, lin 35-40; col. 6, lin 27-31; and the figures.

Therefore the invention as a whole would have been obvious to one of ordinary skill in the art at the time the invention was made because one of skill would have known that the anode-

cathode subassembly could be shaped to have a rectangular cross-section after being formed on a mandrel of non-rectangular cross-section. Takeuchi teaches an alternative method for shaping the subassembly. The method includes after the subassembly has been wound (on a circular mandrel for example) or coiled the subassembly is placed in a suitable pressing fixture including jaws or pressing members which act on opposite surface portions of the subassembly to force or shape the combination to have a substantially rectangular cross-section. See col. 6, lin 59-67 and Fig. 13 of the Takeuchi reference. Therefore one of skill would be motivated to combine Machida and Takeuchi because the Takeuchi reference discloses shaping an anode-cathode subassembly to have a rectangular cross section by using a mandrel of rectangular cross-section or by first forming the subassembly on a non-rectangular mandrel and then pressing the subassembly to have a rectangular cross-section.

Furthermore one of skill would be motivated to use the mandrel of rectangular cross-section of Takeuchi for the mandrel of Machida because Takeuchi teaches that if a rectangular shape is desired a mandrel of rectangular cross-section may be used or a circular subassembly may be pressed to obtain the desired rectangular shape. Depending on the desired shape of the container in which the subassembly is to be placed, one of skill would be motivated to alter the shape of Machida et al.

Claims 1-5, 11 and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Binder et al. 3,298,871 in view of Takeuchi et al. 5,549,717.

Binder et al. teaches a cell including an electrode (e.g. negative electrode) having a greater length, a shorter electrode (e.g. positive) and two separator layers which may be constituted by a single separator band folded around the shortest electrode. A casing surrounds the roll of electrodes (curved surface conforms to casing). In order to wind the electrodes of opposite polarity and their interposed separator or separators together into a spiral roll, the end of one of the electrode bands, e.g. the negative, is inserted into a slot of the mandrel. Then the mandrel is rotated for about one turn in order to maintain the end of the electrode band in the slot. Then, the second electrode, e.g. positive, may be placed over the mandrel-mounted negative electrode band. The winding of the two electrode bands and interposed separator are formed into a spiral roll. Note col. 1, lines 34-54; col. 4, lines 3-10.

Binder et al does not explicitly teach a mandrel of rectangular cross-section having a pair of parallel and planar oppositely-facing surfaces.

However, Takeuchi teaches shaping an anode-cathode subassembly so that the assembly has a rectangular cross-section. One way of achieving this shape is by using a mandrel of substantially rectangular configuration, i.e. cross-section, about which the combination is wound. The step of shaping can be performed simultaneously with the step of winding the combination. See col. 5, lin 35-40; col. 6, lin 27-31; and the figures.

Therefore the invention as a whole would have been obvious to one of ordinary skill in the art at the time the invention was made because one of skill would have known that the anode-cathode subassembly could be shaped to have a rectangular cross-section after being formed on a

mandrel of non-rectangular cross-section. Takeuchi teaches an alternative method for shaping the subassembly. The method includes after the subassembly has been wound (on a circular mandrel for example) or coiled the subassembly is placed in a suitable pressing fixture including jaws or pressing members which act on opposite surface portions of the subassembly to force or shape the combination to have a substantially rectangular cross-section. See col. 6, lin 59-67 and Fig. 13 of the Takeuchi reference. Therefore one of skill would be motivated to combine Binder et al and Takeuchi et al because the Takeuchi et al reference discloses shaping an anode-cathode subassembly to have a rectangular cross section by using a mandrel of rectangular cross-section or by first forming the subassembly on a non-rectangular mandrel and then pressing the subassembly to have a rectangular cross-section.

Furthermore one of skill would be motivated to use the mandrel of rectangular cross-section of Takeuchi for the mandrel of Binder because Takeuchi teaches that if a rectangular shape is desired a mandrel of rectangular cross-section may be used or a circular subassembly may be pressed to obtain the desired rectangular shape. Depending on the desired shape of the container in which the subassembly is to be placed, one of skill would be motivated to alter the shape of Binder et al.

Response to Arguments

Applicant's arguments filed 8/18/00 have been fully considered but they are not entirely persuasive.

Applicant argues that neither Machida et al nor Binder et al teach a mandrel of rectangular cross-section. Both Machida et al and Binder et al teach cylindrical mandrels.

Examiner agrees that neither Machida et al nor Binder et al teach a mandrel of rectangular cross-section, however, Takeuchi teaches a mandrel of rectangular cross-section. Takeuchi also teaches subassemblies formed on cylindrical mandrels may be shaped into subassemblies having rectangular cross-sections. See reasons for rejection under 35 U.S.C. 103 above.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL.** See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tracy Dove whose telephone number is (703) 308-8821. The Examiner may normally be reached *Monday-Thursday from 8:00 AM - 6:30 PM.* My acting supervisors are Carol Chaney, who can be reached at (703) 305-3777, and Steve Kalafut, who can be reached at (703) 308-0433. The Art Unit receptionist can be reached at (703) 308-0661 and the official fax number is (703) 305-3599.

October 26, 2000

Carol Chaney
Carol Chaney
Primary Examiner
Art Unit 1745
10-27-2000